

Claims 1-4 and 6-21 are pending in this application. Claims 1-21 stand rejected. Claim 5 has been canceled.

In accordance with 37 C.F.R. 1.136(a), a two month extension of time is submitted herewith to extend the due date of the response to the Office Action dated August 8, 2002, for the above-identified patent application from November 8, 2002, through and including January 8, 2003. In accordance with 37 C.F.R. 1.17(a), authorization to charge a deposit account in the amount of \$400.00 to cover this extension of time request also is submitted herewith.

The objection to the specification under 35 U.S.C. § 112, first paragraph is respectfully traversed.

Applicant respectfully submits that nuclear reactors highly regulated and that, for example, in the United States, the Nuclear Regulatory Commission has issued numerous rules and guidelines that must be followed to obtain a license and operate a nuclear reactor. These rules and guidelines include numerous safety and reactor design rules and guidelines. Applicant submits that one skilled in the art of nuclear reactor design would know these safety and design rules and guidelines, especially since they are readily available from libraries and the NRC web cite. Applicant submits that the alleged deficiencies in the specification listed in the Office Action at pages 2-7 are all known by one skilled in the art and need not be described in detail. The Federal Circuit in *Verve, LLC v. Crane Cams, Inc.*, Court Docket No. 01-1417, November 14, 2002 (<http://laws.findlaw.com/fed/011417.html>) opined that “[p]atent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be required to be

written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field.”

Specifically, Applicant submits that there is no requirement to enumerate how much smaller the claimed containment vessel is from known containment vessels. Also, one skilled in the art knows the sizes and shapes of currently used and known containment vessels.

Applicant further submits that the specification provides enough detail so that one skilled in the art would know the principal parameters of the boiling water reactor to which the claimed containment system is directed.

Applicant further submits that there is no requirement to enumerate the manner in which the top head is mated with the sidewall through the top flange. Any suitable means known to one skilled in the art can be used.

Applicant further submits that one skilled in the art knows the meaning of the term containing when used in describing the capabilities of a containment vessel.

Applicant further submits that LOCA parameters are known by one skilled in the art and that the NRC details safety requirements for LOCA events.

Also, Applicant disagrees with the suggestion that there is neither an adequate description nor enabling disclosure as to how the containment cooling system is coupled to the containment vessel and how fluid communications is established between the condenser and the drywell, and the drywell and the RPV. Applicant submits that the description provided in paragraphs 19-21 in combination with the schematic diagram of the reactor shown in Figure 2 would enable one skilled in the art to make and use Applicant’s claimed invention.

Applicant further submits that one skilled in the art knows that a remotely actuated valve is a valve that is actuated remote from the location of the valve, for example, by an operator turning a switch or by a sensor activating a solenoid or switch that activates the valve.

Applicant submits that for the reasons explained above that the specification provides an adequate written description of the invention that enables one skilled in the art to make and use the claimed invention and that the specification meets the requirements of Section 112, first paragraph.

For the reasons set forth above, Applicant respectfully requests that the Section 112 objection to the specification be withdrawn.

The rejection of Claims 1-21 under 35 U.S.C. § 101 is respectfully traversed.

As explained above, Applicant submits that the specification provides an adequate written description of the invention that enables one skilled in the art to make and use the claimed invention and that the specification meets the requirements of Section 112, first paragraph. Further, Applicant submits that claimed invention is a new and useful nuclear reactor and meets the requirements of Section 101.

For the reasons set forth above, Applicant respectfully requests that the Section 101 rejection of Claims 1-21 be withdrawn.

The rejection of Claims 1-21 under 35 U.S.C. § 112, first paragraph, is respectfully traversed.

As explained above, Applicant submits that the specification provides an adequate written description of the invention that enables one skilled in the art to make and use the claimed invention and that the specification meets the requirements of Section 112, first

paragraph. Therefore, the subject matter of Claims 1-21 is described in the specification in such clear, concise, and exact terms as to enable one skilled in the art to make and use the claimed invention. Accordingly, Applicant submits that Claims 1-21 meet the requirements of Section 112, first paragraph.

For the reasons set forth above, Applicant respectfully requests that the Section 112 rejection of Claims 1-21 be withdrawn.

The rejection of Claims 2, 3, 5, 10, 13, 15, 20, and 21 under 35 U.S.C. § 112, second paragraph, is respectfully traversed.

Applicant submits that Claim 2 is definite and particularly points out and distinctly claims the subject matter which Applicant regards as the invention. Further, Applicant submits that independent Claim 1 and dependent Claim 2 are not conflicting and clearly claim a range for the pressure rating of the containment vessel. The Office Action suggests that the recitations of Claim 2 permits a pressure rating of zero which conflicts with the recitations of Claim 1. Applicant respectfully submits that that suggestion is not possible because Claim 1 and Claim 2 have to be read together and they clearly define a pressure rating range of at least about 50 atmospheres at the low end and about 150 atmospheres at the high end of the range.

Claims 10 and 21 have been amended to more clearly recite the thickness of the containment vessel cylindrical sidewall.

Applicant respectfully submits that “low alloy steel” is a well known term of art and is not vague and indefinite. Further, the specification explains that low alloy steels contain small amounts of alloying materials, such as, nickel, chromium, silicon, manganese, tungsten molybdenum, and vanadium, to improve mechanical properties.

Applicant respectfully submits that “remotely actuated” is not vague and indefinite but rather clearly refers to a valve that is actuated from a location that is remote from the valve itself.

Claim 20 has been amended and is submitted to be in compliance with Section 112.

For the reasons set forth above, Applicant submits that Claims 2, 3, 10, 13, 15, 20, and 21 are definite and particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claim 5 has been canceled.

For the reasons set forth above, Applicant respectfully requests that the Section 112 rejection of Claims 2, 3, 5, 10, 13, 15, 20, and 21 be withdrawn.

The rejection of Claims 1-4, 6, and 9 under 35 U.S.C. § 102(b) as being anticipated by Rigg (US 3,937,351) is respectfully traversed.

Rigg describes a steam/water separating drum (1) for a nuclear reactor that includes end covers (13), 28 equally spaced circumferential chain tendons (11), and 32 equi-angularly spaced axial chain tendons (12) as shown in Figure 2. Contrary to the suggestion of the Office Action the apparatus described by Rigg is not a double walled pressure vessel.

Claim 1 of the present application recites a metal containment vessel for a boiling water nuclear reactor that includes a bottom head, a removable top head, and a substantially cylindrical sidewall extending from the bottom head to the top head. The bottom head, top head and cylindrical sidewall defining a containment cavity sized to receive and enclose a reactor pressure vessel. The containment vessel having a pressure rating of at least about 50 atmospheres and also includes a drywell located inside the containment cavity, with the drywell isolated from the reactor pressure vessel by a remotely actuated valve.

Rigg does not describe nor suggest a metal containment vessel for a boiling water nuclear reactor as recited in Claim 1. Particularly, Rigg does not describe nor suggest a metal containment vessel for a boiling water nuclear reactor that includes a containment cavity sized to receive and enclose a reactor pressure vessel. Rather, Rigg describes a steam/water separating drum for a nuclear reactor. Rigg does not describe nor suggest that the separating drum is sized to receive a nuclear reactor pressure vessel. Also, Rigg does not describe nor suggest a drywell located inside the containment cavity, nor that the drywell is isolated from the reactor pressure vessel by a remotely activated valve. Rather, Rigg describes a separating drum filled with water that does not contain a drywell. Accordingly, Applicant submits that Claim 1 is patentable over Rigg.

Claims 2-4, 6, and 9 depend from independent Claim 1. When the recitations of dependent Claims 2-4, 6, and 9 are considered in combination with the recitations of Claim 1, Applicant respectfully submits that Claims 2-4, 6, and 9 likewise are patentable over Rigg.

For the reasons set forth above, Applicant respectfully requests that the Section 102(b) rejection of Claims 1-4, 6, and 9 be withdrawn.

The rejection of Claims 1-21 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Gaines et al. (US 3,744,660), and further in view of Kobayashi (US 4,576,784) is respectfully traversed.

Nakamaru et al. describe a boiling water reactor nuclear power plant that includes a pressure vessel (201) located inside a containment vessel (401) that also includes a drywell (231). Nakamaru et al. do not describe a remotely actuated valve isolating the drywell from the

pressure vessel. Also, Nakamaru et al. do not describe a containment vessel having a pressure rating of at least about 50 atmospheres.

Gaines et al. describe a nuclear reactor pressure vessel that includes a protective shield to minimize the consequence of a reactor accident. Gaines et al. describe that the pressure vessel operates at 1000 psi (about 70 atm). Gaines et al. do not describe nor suggest a containment vessel that encloses the reactor pressure vessel inside.

Kobayashi describes a nuclear reactor pressure vessel that has a thickness of about 30 cm. Kobayashi does not describe nor suggest a containment vessel that encloses the reactor pressure vessel inside.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been an obvious to one of ordinary skill in the art to modify Nakamaru et al. according to the teachings of Gaines et al. and Kobayashi. More specifically, as is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. Neither Nakamaru et al., Gaines et al., nor Kobayashi. describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Nakamaru et al., Gaines et al., and Kobayashi because there is no motivation to combine the references suggested in the art. Rather, the Examiner has not pointed to any prior art that teaches or suggests to combine the disclosures, other than Applicants' own teaching. Only the conclusory statement that "it would have been obvious to one having ordinary skill in the art at

the time the invention was made to modify the apparatus, as disclosed by Nakamaru et al., by the teachings of Gaines et al. and Kobayashi, to have a containment vessel having a pressure rating of between 50 and 150 atmospheres” suggests combining the disclosures. Accordingly, Applicant respectfully submits that there is no suggestion or motivation to combine Nakamaru et al., Gaines et al., and Kobayashi.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants’ disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant’s disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown. Particularly, neither Gaines et al. nor Kobayashi teach or suggest a containment vessel having a pressure rating of at least 50 atmospheres. Specifically, neither Gaines et al. nor Kobayashi describe or suggest any containment vessel. Applicant submits that typical containment vessels have large volumes to provide an expansion area for depressurization of steam and typically are configured to contain low pressures of about 2 to 3 atmospheres. Applicants further submit that the only motivation to modify the containment vessel of Nakamaru et al. comes from Applicant’s own specification.

Further, and to the extent understood, neither Nakamaru et al., Gaines et al., nor Kobayashi, considered alone or in combination, describe or suggest the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited

combination. Applicant submits that Nakamaru et al., Gaines et al., and Kobayashi, alone or in combination, do not describe nor suggest a metal containment vessel as recited in Claim 1, nor a boiling water nuclear reactor as recited in Claim 11. Particularly, Nakamaru et al., Gaines et al., and Kobayashi, alone or in combination, do not describe nor suggest a metal containment vessel having a pressure rating of at least 50 atmospheres. Accordingly, Applicant submits that independent Claims 1 and 11 are patentable over Nakamaru et al., Gaines et al., and Kobayashi, alone or in combination.

Claim 5 has been canceled.

Claims 2-4 and 6-10 depend from independent Claim 1 and Claims 12-21 depend from independent Claim 11. When the recitations of dependent Claims 2-4 and 6-10, and 12-21 are considered in combination with the recitations of Claims 1 and 11 respectively, Applicant respectfully submits that Claims 2-4, 6-10, and 12-21 likewise are patentable over Nakamaru et al., Gaines et al., and Kobayashi, alone or in combination.

For the reasons set forth above, Applicant respectfully requests that the Section 103(a) rejection of Claims 1-21 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Favorable action is respectfully

solicited.

Respectfully submitted,

A handwritten signature in cursive script, reading "Michael Tersillo". The signature is written in dark ink and is positioned above a horizontal line.

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Fennern	:	
	:	Art Unit: 3641
Serial No.: 09/683,343	:	
	:	Examiner: R. Palabrica
Filed: December 17, 2001	:	
	:	
For: MODULAR REACTOR	:	
CONTAINMENT SYSTEM	:	

SUBMISSION OF MARKED UP CLAIMS

Commissioner for Patents
Washington, D.C. 20231

A marked-up version of amended Claims 1, 4, 10, 14, 20 and 21, in accordance with 37 C.F.R. § 1.121(c)(1)(ii), follows below.

MARKED UP CLAIMS

1. (amended) A metal containment vessel for a boiling water nuclear reactor, the boiling water nuclear reactor comprising a reactor pressure vessel, said containment vessel comprising:

- a bottom head;
- a removable top head; [and]
- a substantially cylindrical sidewall extending from said bottom head to said top head, said bottom head, top head and cylindrical sidewall defining a containment cavity sized to receive and enclose a reactor pressure vessel, said containment vessel having a pressure rating of at least about 50 atmospheres; and
- a drywell located inside said containment cavity, said drywell isolated from the reactor pressure vessel by a remotely actuated valve.

4. (amended) A containment vessel in accordance with Claim 1 wherein said containment cavity comprises a containment cavity volume, said containment cavity volume [of] less than 4 times [a] the volume of the reactor vessel.

10. (amended) A containment vessel in accordance with Claim 1 wherein said cylindrical sidewall comprises a thickness, said thickness comprising:

[a thickness of] at least about 15 centimeters; and

[a thickness of] not more than about 30 centimeters.

14. (amended) A reactor in accordance with Claim 11 wherein said containment cavity comprises a containment cavity volume, said containment cavity volume [of] less than 4 times [a] the volume of said reactor pressure vessel.

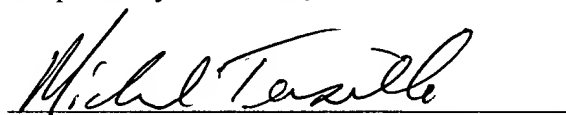
20. (amended) A reactor in accordance with Claim 11 wherein said containment vessel bottom head and said containment vessel sidewall are forged and machined into a substantially complete one piece unit at a location remote from said [support pad] reactor.

21. (amended) A reactor in accordance with Claim 11 wherein said containment vessel cylindrical sidewall comprises a thickness, said thickness comprising:

[a thickness of] at least about 15 centimeters; and

[a thickness of] not more than about 30 centimeters.

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